

Tennessee Pollution Prevention Partnership Success Story



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New Energy-Conserving, Protective Etching Technology

The Member

Goodrich Landing Gear Division, a part of the Goodrich Group, is uniquely positioned to work with industry leaders to satisfy rigorous customer requirements. The Landing Gear Division supports commercial, military, regional and business customers throughout the world. Success of the Landing Gear Division is measured with each takeoff and landing made with their equipment. Aircraft require the best and Goodrich Landing Gear delivers it.

The Story

This project involved the construction, installation, measuring, monitoring and testing of a customer mandated metal finishing chemical etch and chemical milling operation. The equipment completes the chemical milling function and performs the quality control non-destruct operation.

The objective was to design, develop, install, monitor and measure the most environmentally protective, energy efficient, employee safe chemical milling and etching process technologically and economically feasible. This was a new operation that required the use of an extremely hazardous nitric-fluoride dipping solution in two (2) 3000-gallon tanks. This solution is used to etch titanium aircraft landing gear components and other less hazardous materials cannot etch this metal adequately in conformance to aerospace requirements. The facility management determined that having this material at the facility in these quantities could constitute an aspect that could potentially have a significant impact on the environment as well as posing a serious exposure hazard to employees. The project was assigned as a priority objective and target in the facility EMS.

The facility Maintenance Manager and environmental and safety personnel worked with several contractors, visited other similar operations at other plants and facilities and, finally, selected a contractor (KCH Services Inc) that they felt would install the operation with the necessary maximum environmental protection and employee safeguards. The system was installed with a semi-automatic hoist, a

Programmable Logic Controller (PLC) for the maximum management of cover or lid control and airflow volume dampers with bleed-in air control dampers. This control in conjunction with the departmental air makeup system reduced overall airflow emissions, restricted potential employee exposure but also provides absolute minimal energy consumption.

The specific targets that facility management expected to achieve was:

- Energy consumption 10% or more below that of other like or similar installations of the same size.
- Zero hazardous exposure to the operator(s) / (employee(s)).
- Zero hazardous emissions at property line and, if possible, at the point source.

The Success

The project was evaluated over a three months period by the Environmental Protection Agency's Environmental Technology Verification (ETV) Program for Metal Finishing Pollution Prevention (P2) Technologies (ETV-MF) Program.

The EPA's ETV-MF (P2) Program was initiated in 1996 to identify promising and innovative metal finishing pollution prevention technology through EPA-supported performance verifications. George Moore, Ph.D., the Manager of the EPA ETV Center headed this verification project. A final report was issued on November 7, 2001 and details of the results have now been made available on the EPA web site.

The Pollution Prevented

The process requires 1,108,867-kWh/year **less** electricity than other systems of the same size. That is a \$65,884.00 annual cost savings in energy consumption. It also results in zero hazardous exposure to employees, and zero hazardous emissions at the property line.

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